

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Thus, claim 1, which is the only independent claim in the application, has been amended to incorporate the subject matter of claims 3 and 7, as a result of which claims 3 and 7 have been cancelled.

Amended claim 1 also recites that the film has been subjected to a stretching step, which is based on the disclosure at page 11, lines 3-4 of the specification.

As a result of the foregoing amendments, claims 14, 16, 18, 20, 23-27, 29, 33, 35, 39, 42, 46, 50 and 54 have been cancelled, since they are dependent on cancelled claims, or are directed to subject matter which has been incorporated into amended claim 1.

Claim 8 has been amended to recite a lower limit of 80% for the light transmittance of the tubular product, based on the disclosure at page 21, lines 8-10 of the specification. A similar amendment has been made in each of claims 28 and 30-32.

The patentability of the presently claimed invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Initially, the provisional rejection of claim 23 for obviousness-type double patenting as being unpatentable over claim 1 of Serial No. 10/562,447 is respectfully traversed.

Claim 23 has been cancelled, since the subject matter of this claim has been incorporated into amended claim 1. Claim 23 was dependent on claim 2, which is dependent on amended claim 1. So perhaps the Examiner would take the position that claim 2 is obvious from claim 1 of the '447 application.

However, Applicants respectfully submit that the Examiner has confused "tensile elastic moduli" in claim 1 of the '447 application with "tensile strength" in amended claim 1 of the present application, which are different physical qualities. In this regard, reference is made to the following disclosures concerning "tensile elastic moduli" in the published version of the '447 application;

[0028] The fluorine resin tubular article of the present invention has a maximum wall thickness of 20 μm or smaller, and satisfies the following (1) and/or (2) properties.

[0029] (1) Tensile elastic moduli in a circumferential direction and a tube axial direction are both 900 N/mm^2 or greater (hereinafter referred to as "property 1").

[0030] (2) Tensile stresses at 5% elongation in a circumferential direction and a tube axial direction (hereinafter referred to as "5% tensile stress") are both 15 N/mm^2 or greater (hereinafter, referred to as "property 2").

[0031] In the present invention, it is enough that either of the property 1 (tensile elastic modulus) and property 2 (5% tensile stress) is satisfied, and it is preferable that both properties are satisfied.

[0032] As used herein, a tensile elastic modulus, a 5% tensile stress, and a tensile strength (described later) are values obtained by performing a tensile test employing "RTC-1210A" manufactured by ORIENTEC Co., LTD. using a strip of test piece (width: 10 mm) under the conditions of a distance between chucks: 50 mm, and a test speed: 100 mm/min. When a tensile test of a fluorine resin tubular article is performed, the tubular article is cut open to make a test piece.

[0033] A tensile elastic modulus E_m (N/mm^2) is a value obtained using the following equation based on an initial straight part risen from an initial load point of a tensile stress-strain curve obtained upon a tensile test.

$$E_m = \Delta\sigma / \Delta\epsilon$$

[0034] [$\Delta\sigma$: a difference in stresses based on original (before tension) average cross-sectional area between two points on the straight line, $\Delta\epsilon$: a difference in strains between the same two points]

[0035] A 5% tensile stress is the stress in a point elongated, by 5% of a distance between chucks (50 mm), based on an initial load point of a tensile stress-strain curve obtained upon the tensile test, and the stress is based on original (before tension) average cross-sectional area.

It is therefore apparent that the tensile elastic moduli of the '447 application represents a different quality than the tensile strength used in the present invention.

Furthermore, amended claim 1 of the present application requires that the film has been subjected to a stretching step, and this feature of the present invention is not set forth in claim 1 of the '447 application.

For these reasons, Applicants respectfully submit that the double patenting rejection should be withdrawn.

The rejection of claims 1-5, 7, 11, 13-18, 23-26 and 49-54 under 35 U.S.C. §102(b) as being anticipated by Takeuchi et al., as well as the rejection of claims 1-7, 9-27, 34-39, 41-46, 48-54 and 56 under 35 U.S.C. §103(a) as being unpatentable over this reference, are respectfully traversed.

Amended claim 1 of the present application as set forth above recites the following elements:

1. A fluoro-resin tubular product formed by rolling, layering, and sticking a dense polytetrafluoroethylene film,
2. wherein the number of rolling of the film is 2 or greater,
3. wherein the tubular product has a tensile strength of 80 N/mm² or higher,
4. wherein said film has been subjected to a stretching step.

In the Office Action, page 3, Item 7, the Examiner states that "Takeuchi et al. teach that polytetrafluoroethylene can be used as the film for the tubular product (column 16 line 28-34)". However, the Examiner's assertion of "as the film" is not correct. In Takeuchi et al., column 16, lines 28-34, there is a description of "numeral 50 denotes a columnar member made from a polytetrafluoroethylene resin," and therefore polytetrafluoroethylene is described as a material constituting "a columnar member", not "as the film".

As seen from Fig. 23 in Takeuchi et al., which is described in column 16, lines 28-34, it is clear that “50” is not a film. The film is “polyimide resin film” (“54”) (column 16, lines 40-42) and “PFA resin film” (“56”) (column 16, lines 50-51). Accordingly, contrary to the Examiner’s position, Takeuchi et al. do not describe element 1 of the present invention as set forth above.

In the Office Action, page 3, Item 7, the Examiner states that “Takeuchi et al. also teach tensile strengths greater than 800N/mm^2 (Figure 41)”. Referring to the table of Fig. 41, the upper and middle rows in the table are related to “CONNECTED PORTION”, and therefore they do not relate to the film of the present application. The lower row of the table shows strength of a film, but this film is PEEK film, so it is not “a dense polytetrafluoroethylene film” of claim 1 of the present application. Further, a unit of tensile strength described in Fig. 41 is “ Kg/cm^2 ”. In any event, it is meaningless to compare values of tensile strength of films made of different materials. Accordingly, contrary to the Examiner’s position, Takeuchi et al. do not describe element 3 of the present invention as set forth above.

Furthermore, the reference fails to disclose or suggest element 4 of the present invention as set forth above, wherein the dense polytetrafluoroethylene film has been subjected to a stretching step.

For these reasons, Applicants respectfully submit that the presently claimed invention is neither anticipated or suggested by the Takeuchi et al. reference. This applies to all of the claims subject to rejection based on this reference, which are either directly or indirectly dependent on claim 1.

The rejection of claims 8, 28-33, 40, 47 and 55 under 35 U.S.C. §103(a) as being unpatentable over Takeuchi et al. in view of Okamura et al. is respectfully traversed.

The comments set forth above concerning the Takeuchi et al. reference are equally applicable to this rejection.

After stating that Takeuchi et al. are silent regarding the light transmittance of the fluororesins, the Examiner refers to various disclosures of the Okamura et al. reference, and then argues that it would have been obvious to one of ordinary skill in the art at the time of the invention that the tubes of Takeuchi et al. could be made from a fluororesin film with a light transmittance of greater than 50% at 500 nm.

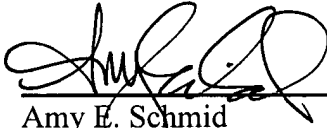
In Okamura et al., it is not a transparent protective layer (40), but a transparent laminate (10), that has visible light transmittance of not less than 50%. The Examiner's citation of column 6, lines 14-16 is too narrow to determine the above. The Examiner cites only the description of "visible light transmittance of not less than 50%", but in column 6, line 4, there is the description that "Transparent laminate" has visible light transmittance of not less than 50%. Further, referring to TABLE 2 in column 41, Fig.2, Example 1, and the Abstract, it is clear that the transparent laminate (10) is associated with the description of "not less than 50%", rather than the transparent protective layer (40). Applicants thus respectfully submit that the Examiner has misunderstood the disclosure of the Okamura et al. reference as applied to the presently claimed invention.

For these reasons, Applicants take the position that the present invention as claimed is clearly patentable over the applied references.

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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January 2, 2008